

CLAIMS

1. An apparatus for generating a fluid meniscus to be formed on a substrate, comprising:

5 a housing further comprising a housing surface to be positioned proximate to a surface of the substrate, the housing further comprising a process configuration receiving region that is surrounded by the housing surface; and

a process configuration insert comprising an insert surface, the process configuration insert being defined to fit within the process configuration receiving region of the housing such that the insert surface and the housing surface define a proximity face
10 that can be positioned proximate to the surface of the substrate.

2. An apparatus for generating a fluid meniscus as recited in claim 1, further comprising:

a cover being configured to be attachable to the housing to at least partially
15 enclose the process configuration insert within the housing.

3. An apparatus for generating a fluid meniscus as recited in claim 1, wherein the process configuration insert includes a plurality of conduits to enable definition of the meniscus fluid.
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4. An apparatus for generating a fluid meniscus as recited in claim 3, wherein the housing includes a plurality of conduits to enable definition of the fluid meniscus.

5. An apparatus for generating a fluid meniscus as recited in claim 3, wherein the plurality of conduits includes at least one of a first inlet for applying a first fluid to the substrate surface, a second inlet for applying a second fluid to the substrate surface, and an outlet for removing the first fluid and the second fluid from the substrate surface.

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6. An apparatus for generating a fluid meniscus as recited in claim 4, wherein the plurality of conduits includes at least one of a first inlet for applying a first fluid to the substrate surface, a second inlet for applying a second fluid to the substrate surface, and an outlet for removing the first fluid and the second fluid from the substrate surface.

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7. An apparatus for generating a fluid meniscus as recited in claim 3, wherein the process configuration insert is removable and replaceable with a different process configuration insert with a different plurality of conduits with a different configuration than the plurality of conduits of the process configuration insert.

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8. An apparatus for generating a fluid meniscus as recited in claim 7, wherein the different plurality of conduits of the different configuration insert is capable of generating a fluid meniscus with a different configuration.

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9. An apparatus for generating a fluid meniscus to process a substrate, comprising:

a manifold head with a manifold surface having a plurality of conduits configured to generate a fluid meniscus on a substrate surface when positioned proximate the

substrate, the manifold head having a plurality of passages capable of communicating fluids with the plurality of conduits; and

an interface membrane attached to a portion of the manifold head, the interface membrane configured to block a portion of the plurality of conduits.

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10. An apparatus for generating a fluid meniscus to process a substrate as recited in claim 9, wherein the interface membrane is one of a thermoplastic film, a tape, and an engineering plastic.

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11. An apparatus for generating a fluid meniscus to process a substrate as recited in claim 9, wherein the plurality of conduits include a first inlet for applying a first fluid to the substrate surface, a second inlet for applying a second fluid to the substrate surface, and an outlet for removing the first fluid and the second fluid from the substrate surface.

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12. An apparatus for generating a fluid meniscus to process a substrate as recited in claim 11, wherein each of the first inlet and the second inlet are configured to be supplied with fluid from a corresponding one of a first passage and a second passage, the outlet configured to remove each of the first fluid and the second fluid from the substrate surface through a third passage.

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13. An apparatus for generating a fluid meniscus to process a substrate as recited in claim 11, wherein the interface membrane is attached to a proximity face on the manifold surface to cover at least a portion of the plurality of conduits.

5 14. An apparatus for generating a fluid meniscus to process a substrate as recited in claim 11, wherein the interface membrane is attached to the manifold head to block at least a portion of the first passage, the second passage, and the third passage.

15. A method for processing a substrate using a process configuration insert
10 defined within a housing, comprising:

applying a first fluid to a surface of the substrate through a first inlet of one of the housing and the process configuration insert;

applying a second fluid to the surface of the substrate through a second inlet of the process configuration insert; and

15 removing the first fluid and the second fluid from the surface through an outlet of the process configuration insert.

16. A method for processing a substrate as recited in claim 15, wherein the first fluid is one of a cleaning fluid, a drying fluid, an etching fluid, and a plating fluid.
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17. A method for processing a substrate as recited in claim 15, wherein the removing comprises applying a vacuum through the outlet.

18. A method for processing a substrate as recited in claim 15, wherein the second fluid decreases a surface tension of the first fluid.

5 19. A method for processing a substrate as recited in claim 15, further comprising,

replacing the process configuration insert with a different process configuration insert with a different configuration of the first inlet, the second inlet, and the outlet.

10 20. A method for processing a substrate using a process configuration insert capable of generating a fluid meniscus when defined within a manifold housing, comprising:

providing an additional process configuration insert capable of forming a different fluid meniscus when defined within the manifold housing, the different fluid meniscus

15 having a different configuration than the fluid meniscus;

removing the process configuration insert from the manifold housing;

attaching the additional process configuration insert to the manifold housing; and

generating the different fluid meniscus on the substrate.

20 21. A method for processing a substrate using a process configuration insert capable of generating a fluid meniscus when defined within a manifold housing as recited in claim 20, wherein the additional process configuration insert when disposed within the

manifold housing has a proximity face with a first conduit for applying a first fluid to the substrate, a second conduit for applying a second fluid to the substrate, and a third conduit for removing the first fluid and the second fluid.

5 22. A method for processing a substrate using a process configuration insert capable of generating a fluid meniscus when defined within a manifold housing as recited in claim 21, wherein the housing comprises at least the second conduit.

 23. A method for processing a substrate using a process configuration insert
10 capable of generating a fluid meniscus when defined within a manifold housing as recited in claim 21, wherein the process configuration insert comprises at least the first conduit and the third conduit.

 24. A method for generating a fluid meniscus to process a substrate,
15 comprising:

 providing a proximity head capable of generating a fluid meniscus through application of a first fluid to the substrate from a first inlet and application of a second fluid to the substrate from a second inlet and removal of the first fluid and the second fluid from the substrate through an outlet;

20 blocking at least a portion of at least one of the first inlet, a first fluid passage to the first inlet, a second inlet, a second fluid passage to the second inlet, the outlet, and the third fluid passage from the outlet; and

wherein at least one of a shape and size of the fluid meniscus is adjustable by varying a blocked portion of the at least one of the first inlet, a first fluid passage to the first inlet, a second inlet, a second fluid passage to the second inlet, the outlet, and the third fluid passage from the outlet.

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25. A method for generating a fluid meniscus to process a substrate as recited in claim 24, wherein the fluid meniscus is made larger when at least one of the outlet and the third fluid passage from the outlet is blocked.

10 26. A method for generating a fluid meniscus to process a substrate as recited in claim 24, wherein the first fluid is one of an cleaning fluid, a drying fluid, an etching fluid, and a plating fluid.

15 27. A method for generating a fluid meniscus to process a substrate as recited in claim 24, wherein the second fluid decreases surface tension of the first fluid.

20 28. A method for generating a fluid meniscus to process a substrate as recited in claim 24, wherein the blocking includes attaching an interface membrane to a portion of the proximity head with at least a one of the first inlet, a first fluid passage to the first inlet, a second inlet, a second fluid passage to the second inlet, the outlet, and the third fluid passage from the outlet.

29. A method for generating a fluid meniscus to process a substrate as recited in claim 28, wherein the interface membrane is one of a thermoplastic film, a tape, and an engineering plastic.

5 30. A method for generating a fluid meniscus to process a substrate as recited in claim 24, wherein the third fluid passage applies a vacuum to the outlet.